IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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| First Named Applicant: Morgan | ) | Art Unit: 2182 |
| Serial No.: 09/933,494 | ) | Examiner: Martinez |
| Filed: August 20, 2001 | ) | **ARC9-2001-0079US1** |
| For: **SYSTEM AND METHOD TO USE UNMODIFIED OPERATING SYSTEM ON DISKLESS COMPUTER** | ) | February 22, 2004<br>750 B STREET, Suite 3120<br>San Diego, CA 92101 |



## APPEAL BRIEF

This appeal brief is submitted under 35 U.S.C. §134. This appeal is further to Appellant's Notice of Appeal filed herewith.

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### (1) Real Party in Interest

The real party in interest is IBM Corp.

### (2) Related Appeals/Interferences

No other appeals or interferences exist which relate to the present application or appeal.

### (3) Status of Claims

Claims 1-3, 5-10, 12-21, and 23-27 are pending and finally rejected.

## (4) Status of Amendments

No amendments are outstanding.

## (5) Summary of Invention

Using Claim 1 as an example, the invention is a system that has a computer including a central processing unit (CPU) but not including a local hard disk drive. An adapter is coupled to the CPU for receiving local disk I/O requests therefrom. As set forth in all independent claims, the adapter translates disk I/O requests into network I/O requests. A network resource communicates with the adapter for satisfying the local disk I/O requests.

## (6) Issues

(a) Whether Claims 1-3, 5, 6, 8, 10, 12-15, 17, 19-21, 23, 24, and 26 are unpatentable under 35 U.S.C. §102 as being anticipated by Kedem et al.

~~(b)~~ Whether Claims 9, 18, and 27 are unpatentable under 35 U.S.C. §103 as being obvious over Kedem et al.

~~(c)~~ Whether Claims 7, 16, and 25 are unpatentable under 35 U.S.C. §103 as being obvious over Kedem et al. in view of Kathail et al.

## (7) Grouping of Claims

The rejected claims are grouped as indicated above owing to the different grounds of rejection.

**(8a) Argument**

The error in the rejections is manifest and will be succinctly dealt with. It is alleged that while Kedem et al. fails to explicitly teach that its LDIM, used as the claimed adaptor, translates disk I/O requests to network requests, such is "inherent" in order "to handle requests from a CPU and to communicate to a remote server through a network".

This is a false reading of Kedem et al. In fact, Kedem et al teaches precisely the opposite of what the examiner alleges is inherent.

At col. 4, lines 32-35, Kedem et al. teaches "In this case, the LDIM transmits to the RDIM a read request message, which may include ***the address specified in the intercepted read request***". This address is a disk address, not a network address, since it appears in the intercepted read request to the local drive (referred to as the "LPSD"). This is not surprising since Kedem et al. teaches that the network drive "RPSD" is a mirror of the local drive, col. 3, lines 50-55.

At col. 4, lines 52-64 (discussing embodiments in which there is no local disk drive), Kedem et al. explicitly require that "***all read/write requests for data that are received by the LDIM are transmitted to the RDIM***". That is, Kedem et al. explicitly teaches that no translation is undertaken, much less is translation necessarily undertaken as is otherwise required to support an inherency rejection under MPEP §2112. In other words, Kedem et al. explicitly teaches what the examiner strangely maintains must be inherently absent, i.e., the direct transmission of an untranslated disk I/O request over a network.

The fact that such disk requests are directly transmitted without the claimed translation is reiterated, by way of example, in the detailed description at col. 9, 34-36. If Kedem et al. required translation by the

LDIM of the disk I/O requests to network requests, it is strange that Kedem et al. didn't mention it, since the LDIM is at the heart of Kedem et al.

The examiner's response to the above observations are unavailing to his position. He states, on page 5 of the Office Action, that the Abstract indicates the performance of translation. In fact, the Abstract, penultimate sentence, states "If it [cached data] is not up to date, the ***LDIM transmits the read request to the RDIM***", i.e., without translation being mentioned at all.

The examiner next relies on col. 3, lines 42-46 and col. 8, lines 28-33, which both say the same thing - that the LDIM communicates with the RDIM through a network, not that it must translate disk I/O requests to network requests.

Next, the examiner cites col. 10, lines 56-62, apparently unaware that this section again bolsters Appellant's case by stating "reads and writes that are transmitted by the disk adapter 304 ***are intercepted and processed by the LDIM as described above***", i.e., sent directly over the network without translation.

Col. 11, lines 20-23, also cited by the examiner, simply indicates that the LDIM has a network interface, not that it translates disk I/O requests to network requests.

The examiner then makes two essentially correct observations but then combines them to arrive at a non-sequitur. Specifically, on page 6 he observes that networks facilitate communication using network requests (true) and that Kedem et al.'s RDIM and LDIM communicate over a network (also true). But he then leaps to the conclusion that the LDIM must undertake the claimed translation. The logical flaw is that the examiner incorrectly assumes the exclusivity of network requests, i.e., he thinks that because networks facilitate ***some*** communication using network requests, then ***all*** communication over a network *ipso facto* must

be in the form of network requests. If the prior art in the form of Kedem et al. was not in so much vigorous disagreement with the examiner on this point, Appellant would concede.

While it is not up to Applicant to guess just how Kedem et al. might directly send disk I/O requests to a network resource without requiring translation, Applicant offers the general observation that it is certainly possible to send untranslated data anywhere on a network, and that there is nothing in theory to prevent a receiving component from understanding the untranslated data. Thus, the conjecture that Kedem et al. necessarily translates disk I/O requests to network requests despite the inconvenient fact that Kedem et al. teaches no such thing, is on shaky ground. In any case, because the evidence of record directly contradicts the Examiner's finding of fact, the rejection cannot stand, see Dickinson v. Zurko, 527 U.S. 150 (1999), placing the U.S. P.T.O. under the Administrative Procedures Act, which makes clear that an agency that renders a finding of fact that is in direct opposition to the evidence of record is behaving arbitrarily and capriciously.

**(8b) Argument**

For the reasons above, the dependent claims are patentable. Further, the examiner alleges that Kedem et al. teaches an adapter ***card***, but it doesn't. It just teaches that the LDIM is somewhere inside a computer, not that it is on an adaptor card.

**(8c) Argument**

For the reasons above, the dependent claims are patentable. Further, the proposed combination of Kathail et al. with Kedem et al. lacks prior art support. The proferred suggestion to combine does not find

support in Kedem et al. and Kathail et al. provides no cited motivation to combine it with the LDIM of Kedem et al.

Respectfully submitted,

John L. Rogitz
Registration No. 33,549
Attorney of Record
750 B Street, Suite 3120
San Diego, CA 92101
Telephone: (619) 338-8075

JLR:jg

## APPENDIX A

1. A system, comprising:

a computer including a central processing unit (CPU) but not including a local hard disk drive;

an adapter coupled to the CPU for receiving local disk I/O requests therefrom, the adapter translating disk I/O requests into network I/O requests; and

at least one network resource communicating with the adapter for satisfying the local disk I/O requests.

2. The system of Claim 1, wherein the adapter is plugged into a motherboard holding the CPU.

3. The system of Claim 1, wherein the adapter is connected by a connecting cable to a motherboard holding the CPU.

4. (cancelled).

5. The system of Claim 1, wherein the adapter is also a computer network adapter.

6. The system of Claim 1, wherein the adapter is not a conventional computer network adapter, the computer including a conventional network adapter separate from the adapter.

7. The system of Claim 1, wherein the adapter includes a sequence of bytes identifying the adapter to the CPU as a secondary boot device.

8. The system of Claim 1, wherein the adapter causes a conventional operating system configured for generating local disk I/O requests to be loaded from a network storage to a volatile memory in the computer.

9. The system of Claim 1, wherein the adapter is housed within the computer.

10. A method for facilitating, in a diskless computer, the use of an operating system not modified to not issue local disk I/O requests, comprising:

receiving local disk I/O requests from the operating system; and

satisfying the local disk I/O requests by accessing a network communicating with the diskless computer, wherein the satisfying act includes translating the local disk I/O requests to network requests at an adapter engaged with the diskless computer, transparently to a CPU in the diskless computer.

11. (cancelled).

12. The method of Claim 10, comprising plugging the adapter into a motherboard holding a CPU of the diskless computer.

13. The method of Claim 10, comprising connecting the adapter to a motherboard holding a CPU of the diskless computer using a connecting cable.

14. The method of Claim 10, wherein the adapter is also a computer network adapter.

15. The method of Claim 10, wherein the adapter is not a conventional computer network adapter, the diskless computer including a conventional network adapter separate from the adapter.

16. The method of Claim 10, wherein the adapter includes a sequence of bytes identifying the adapter to a CPU of the diskless computer as a secondary boot device.

17. The method of Claim 10, comprising causing a conventional operating system configured for generating local disk I/O requests to be loaded from a network storage to a volatile memory in the computer.

18. The method of Claim 10, comprising disposing the adapter in the computer.

19. A diskless computer, comprising:

a CPU running an operating system not modified to not issue local disk I/O requests;

a disk-free adapter communicating with the operating system and receiving disk I/O requests therefrom, the adapter translating the disk I/O requests to network requests; and

a network connection through which the disk I/O requests can be satisfied despite the lack of a local hard disk drive in the computer.

20. The computer of Claim 19, wherein the adapter is plugged into a motherboard holding the CPU.

21. The computer of Claim 19, wherein the adapter is connected by a connecting cable to a motherboard holding the CPU.

22. (cancelled).

23. The computer of Claim 19, wherein the adapter is also a computer network adapter.

24. The computer of Claim 19, wherein the adapter is not a conventional computer network adapter, the computer including a conventional network adapter separate from the adapter.

25. The computer of Claim 19, wherein the adapter includes a sequence of bytes identifying the adapter to the CPU as a secondary boot device.

26. The computer of Claim 19, wherein the adapter causes the operating system to be loaded from a network storage to a volatile memory in the computer.

27. The computer of Claim 19, wherein the adapter is housed within the computer.